

C1. General Design

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MM No. 85, Layout for bridges on four lane highways, 30 January 2004

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Project Description:

Project Number:

Design Number:

File Number:

Design Team	Name	PE Number	Signature
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Transportation Engineer Manager (TEM)

Designer:

Technician:

Checker:

Engineer of Record (EOR):

Hydraulic Design Engineer:

Design Parameters (Complexity)

Alignment: Straight ____ Curved ____

Superstructure: CCS (std) ____ CCS (dsn) ____ PPCB (std) ____ PPCB (dsn) ____

RSS (std) ____ RSS (dsn) ____ CWPG ____

RCB (std) ____ RCB (dsn) ____ MISC (std) ____ MISC (dsn) ____

Substructure: Integral Abutment ____ Stub Abutment ____

Pile Bent Pier ____ Frame Pier ____ T-Pier ____ Wall Pier ____

C1.11.6 Post-letting environment

C1.12 Cost estimates

C1.13 Software

C1.14 Plan turn-in

C1.14.1 Plan coordination

C1.14.2 Prior to plan turn-in

C1.15 Plan changes

C1.16 Plan revisions

C1.17 Shop drawings

Obsolete: Methods Memo No. 34: New Standard Specifications
11 July 2001

Obsolete: Methods Memo No. 157: HS25 Loading on Substructures
4 January 2007

C1.18 Local Systems Review

LPA CURSORY REVIEW ITEMS FOR BRIDGE OR CULVERT PLANS

The following bulleted items are some of the general issues/concerns to address for cursory structural reviews. Since each structure is different, not all of these items pertain to each cursory review. Furthermore, the extent of the review shall not be limited to the items below. The review engineer shall make a sound judgment on what the critical issues are for the structure.

- Verify the design code and specifications are correct.
- Verify that the plan has typical bridge or culvert design makeup: bridge, geotechnical, and road sheets. Notify the engineer of record if any items might be missing.
- Verify that all disciplines have a PE seal in the plans.
- Briefly verify that the type of structure is appropriate for the location based on the Situation Plan sheet. For bridges and culverts, the structure should meet the general policies established in the BDM. [BDM 7.1.1(culverts) and BDM 3.2.6, 3.2.7, 5.1.1, 6.1.1, 6.5.1.1, 6.6.1.1 (bridges)]
- For bridges, verify horizontal and vertical clearances are acceptable or piers are adequately protected. [BDM 3.2.2.4 (waterway), BDM 3.2.3.1, 3.2.7.4 (highway), and BDM 3.2.4.1.1, 3.2.4.1.2, 3.2.4.2.1, 3.2.4.2.2 (Railroad)]
- For bridges over waterways, briefly review the hydraulic information for conformance to the OBS preliminary design policies. Some example items to review are given below:
 1. Pier type is adequately chosen for the drainage area listed or for the potential of debris flowing in the channel. [BDM 3.2.7.4]
 2. Stream velocities and scour depths may indicate a need for stream bank protection. [BDM 3.2.2.6]
 3. “Design” and “Check” scour elevations and high water elevation for stage flows should be listed.
- If standard bridge or culvert sheets appear applicable, encourage the designer to use them:
 1. Bridge wing armoring
 2. Subdrains
 3. Slope Protection
 4. Abutment backfill procedures
 5. Etc.
- For bridges, briefly review the soil borings to obtain an idea of the foundation bearing conditions. For pile foundations, generally assess the Structural Resistance Level (SRL-1, SRL-2, etc.) of the pile foundation and the adequacy for the soil conditions.
- Look for future maintenance headaches (i.e. type of bearings or lack of bridge deck drainage).
- Look for structural adequacy problems. Member sizes should visually be reasonable and all necessary structural components should be included (i.e. intermediate diaphragms).
- Look for constructability problems (i.e. steel reinforcing congestion in concrete).
- Encourage serviceability improvements to the structure (i.e. deck drains).